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Public Health Reports

Vol. 66 • MAY 18, 1951 • *No. 20*

Activities of Medical Administrators in State Health Departments

By HARALD M. GRANING, M.D., M.P.H., MARION FERGUSON, R.N., Ph.D., BESS A. CHENEY, M.A., and ANNE M. LEFFINGWELL, B.N., M.S.*

The Nation today is facing a major manpower shortage in the field of public health. One of the acute problems is that of meeting the increasing demands for public health trained medical personnel to fill administrative positions. The prevailing shortages in State and local areas will be accentuated by the responsibilities for civil defense preparation, the needs of the military, and the Point IV program. As public health workers, we are concerned with the development of optimum health services for all population groups on a Nation-wide scale. Factors involved in the attainment of this objective include increasing the number of public health trained physicians and the maximum utilization and integration of qualified medical personnel now in State and local health jurisdictions.

The present study was undertaken to obtain information from medical administrative personnel in State health departments as to their duties and responsibilities. It also proposed to ascertain, if possible, what activities now performed by medical administrators require medical skills.

By studying the various activities in connection with all kinds of public health programs, it was hoped to learn (1) ways in which the skills and knowledge possessed by medically trained persons could be utilized more productively; (2) areas of operation in which administrative assistants without medical training could supplement and extend the fields of operation of the medically trained administrator, thus releasing him from administrative responsibilities not requiring medical training. The delegation of nonmedical administrative duties to well-prepared administrative assistants might have far-reaching implications in the attainment of more and better public health services despite the acute shortages of physicians.

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Distribution of Participants

In order to learn what medical personnel in administrative positions in State health departments do from day to day, medical State health officers and medical personnel in administrative positions in all State health departments were invited to participate in the study.

One hundred and seventy-three persons in medical administrative positions [1] in 34 States volunteered to submit detailed reports for one week during December 1949 or January 1950. The participants are to be commended for the excellent way in which they responded and for the meticulous manner in which they filled out the reports. Out of 10,838 activities reported in the study, only 22 could not be identified. This speaks exceedingly well for the importance which the physicians attached to this study, made possible only because they were willing to contribute their time and to give careful attention to the detail involved.

Since participation in the study was voluntary, the geographic distribution of respondents was in no way predetermined. The map (fig. 1) showing Federal Security Agency Regions indicates a satisfactory sample from every region, although 14 States scattered throughout the country were not represented. For the country as a whole, 45 percent of the 343 physicians in administrative positions in State health departments participated in the study. The percentages

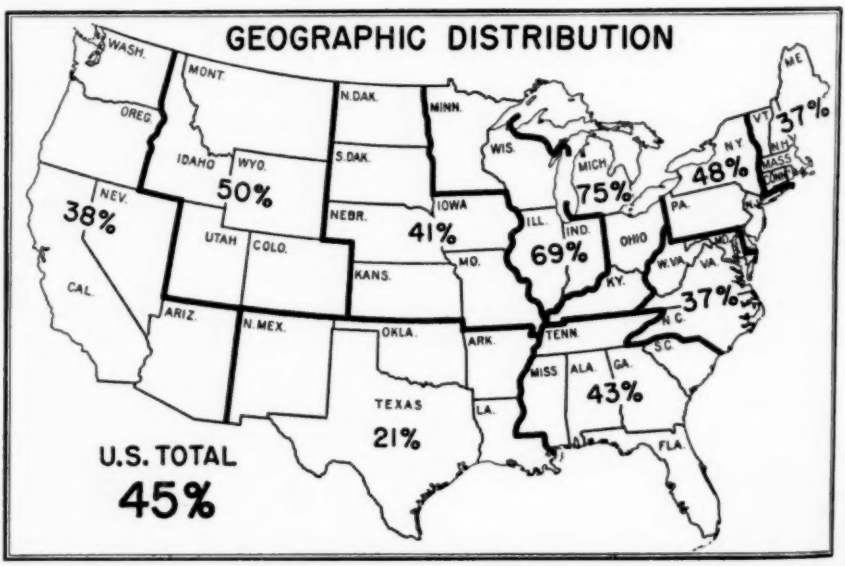


Figure 1. Geographic distribution by Federal Security Agency Regions, showing the percentage of medical personnel in administrative positions in State health departments who participated in the study of activities of medical administrative personnel during December 1949 or January 1950.

[1] This includes five dentists.

range from 21 percent in Region VIII to 75 percent in Region IV. All of the regions except one had a response of 32 percent or more.

Examination of the programs represented in the study shows a fairly complete coverage of the major divisions usually functioning in State health departments. The medical personnel in administrative positions in State health departments participating in the study have been grouped into the following 14 categories:

Category	*Number of participants*
Total	173
Maternal and child health and crippled children	23
Local health administration	21
Tuberculosis	20
Venereal diseases	19
Communicable diseases	17
District health officers	15
Chronic diseases	14
Laboratory	12
State health officers and assistant State health officers	10
Industrial hygiene	7
Dental services	5
Mental health	4
Hospital services	3
Special services	3

NOTE: These data and those in succeeding charts and tables were obtained from the replies of respondents who recorded their activities for either one week in December 1949 or in January 1950.

Method of Study

The data was collected through the use of a relatively simple daily report form on which each participant in the study noted in code what he did, how long it took to the nearest 5 minutes, and whether or not in his opinion the activity involved medical judgment. All time reported, except the time definitely identified as not connected with health department duties, was included in the tabulations. Records have been tabulated as submitted except that the end of one activity was considered to mark the beginning of the next, and the time was so computed.

Results of Study

This report presents the results of analyses of what the participating medical administrators reported as their activities for one work week. A summary of the basic data as to time and occurrence of activities and programs is shown in tables 1 and 2.

Although the recording of time by program and activity represents fact, the expression by participants as to whether medical judgment was or was not involved represents opinion. It is this *opinion* which is truly significant, since the medical administrator will determine the responsibilities to be assigned to nonmedical administrative personnel.

Table 1. *Amount of time in minutes and frequency of occurrence, according to total time and occurrence and according to the utilization of medical judgment, reported for activities by medical personnel in administrative positions in State health departments for 1 week during December 1949 or January 1950*

Activity	Total		Medical judgment					
			Involved		Not involved		Not specified	
	Occurrences	Time	Occurrences	Time	Occurrences	Time	Occurrences	Time
All activities	10,838	442,705	7,423	311,140	3,204	115,185	211	16,380
Direction and supervision	576	18,350	438	13,990	132	4,290	6	70
Personnel	321	9,900	140	5,065	181	4,835	----	----
Program planning	783	34,210	673	29,920	108	4,240	2	50
Budget and fiscal	266	8,555	108	4,000	158	4,555	----	----
Enforcement of ordinances	49	2,760	37	2,370	12	390	----	----
Licensing	30	1,540	16	1,135	14	405	----	----
Authorization for hospitalization	69	2,360	61	2,050	8	310	----	----
Correspondence	1,583	53,330	1,255	44,370	327	8,935	1	25
Telephone	1,430	13,345	933	9,005	492	4,280	5	60
Records and reports	729	28,205	506	20,700	218	7,335	5	170
Board or committee participation	78	7,635	64	6,675	13	900	1	60
Meetings attended	88	10,560	66	8,215	22	2,345	----	----
Conferences, individual	1,480	47,280	1,123	38,125	355	9,115	2	40
Conferences, group	611	43,630	485	36,145	125	7,395	1	90
Community activity	94	5,505	57	3,585	34	1,530	3	390
Talks given	56	4,405	52	4,270	4	135	----	----
Education-in-service	118	8,080	89	6,055	29	2,025	----	----
Teaching—formal	38	3,260	36	2,990	2	270	----	----
Self-improvement	355	13,390	275	10,570	76	2,710	4	110
Preparation of educational material	275	13,580	234	11,555	41	2,025	----	----
Field investigations	51	6,420	43	6,025	7	335	1	60
Evaluations and surveys	181	9,625	147	8,390	31	1,130	3	105
Clinic participation	166	13,560	165	13,545	1	15	----	----
Consultation service	136	4,890	135	4,875	1	15	----	----
Purchasing	76	1,975	25	795	49	1,105	2	75
Housekeeping and errands	65	1,640	8	370	56	1,220	1	50
Travel	725	56,430	80	7,675	544	39,160	101	9,595
Personal	196	4,225	15	255	124	2,780	57	1,190
Laboratory specimens	33	1,830	15	1,000	18	830	----	----
Legislation	11	525	7	420	4	105	----	----
Film interpretation	104	4,960	104	4,960	----	----	----	----
Hospital plans	5	300	5	300	----	----	----	----
Checking and supervising equipment	7	135	2	60	5	75	----	----
Unavoidable delay	15	340	12	190	2	110	1	40
Research	4	720	4	720	----	----	----	----
Leave—annual or sick	11	4,120	----	----	----	----	11	4,120
Tuberculin testing	3	255	3	255	----	----	----	----
Unspecified	20	875	5	515	11	280	4	80

Time for all activities reported by the 173 medical personnel in administrative positions in State health departments amounted to a total of 442,705 minutes. This represented 10,838 individual occurrences of activity, an average of 41 minutes for each occurrence (table 1). Included in the total of 442,705 minutes are travel, personal, and leave time, and a small amount of unidentified time. Of the total time reported, 311,140 minutes were recorded in which medical judgment was involved—an average of 42 minutes for each occurrence. For activities in which the respondents stated that medical judgment was not involved, 115,185 minutes were reported

with an average time of 36 minutes per occurrence; and for 16,380 minutes for which the involvement of medical judgment was not specified, the average was 78 minutes for each occurrence.

Omission of the items of leave, personal time, travel time, and unidentified time reduces the total time of 442,705 minutes to 377,055 and the number of occurrences from 10,838 to 9,886. The minutes for each occurrence are but slightly altered in the activities involving medical judgment—the average time is 41 minutes for each occurrence. Those not involving medical judgment and the group for which the involvement of medical judgment was not specified are changed to 29 minutes and 37 minutes, respectively.

In terms of percentage, figure 2 shows that 70 percent of the time and 68 percent of the occurrences reported in the study involved medical judgment; 26 percent of the time and 30 percent of the occurrences did not involve medical judgment. Medical judgment was not specified for 4 percent of the time and 2 percent of the occurrences.

Total time reported for travel was 56,430 minutes, or 13 percent, of all time reported. This represented the greatest amount of time devoted to a single activity.

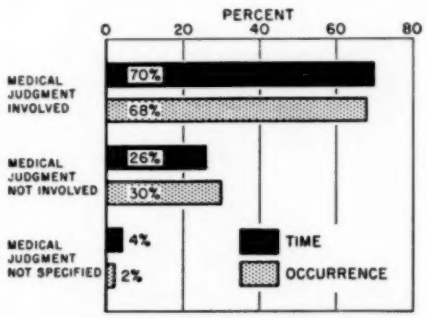


Figure 2. **Activities reported by medical personnel in administrative positions in State health departments, by percentage of time required and by percentage of occurrences.**

Programs

Reports from medical personnel indicated activities in 39 programs, 9 of which were reported fewer than 20 times each (table 2). Of the total of 442,705 minutes, 122,850 minutes were recorded in the general category which includes activities that affected more than one program. Of the specific programs, tuberculosis led with 53,310 minutes. Next in line were venereal disease with 38,330 minutes; laboratory, 26,450 minutes; other communicable diseases, 25,520 minutes; and cancer, 22,420. The general program represented 28 percent of the total time, and the five specific programs, 37 percent, totaling 65 percent of all time reported for the six programs.

Table 2. *Amount of time in minutes and frequency of occurrence, according to total time and occurrence and according to the utilization of medical judgment, reported for program operations by medical personnel in administrative positions in State health departments for 1 week during December 1949 or January 1950*

Program	Total		Medical judgment					
			Involved		Not involved		Not specified	
	Occurrences	Time	Occurrences	Time	Occurrences	Time	Occurrences	Time
All programs	10,838	442,705	7,423	311,140	3,204	115,185	211	16,380
General	2,661	122,850	1,719	80,705	882	35,105	60	7,040
Tuberculosis	1,456	53,310	1,093	41,065	355	11,725	8	520
Venereal diseases	848	38,330	616	28,325	213	7,890	19	2,115
Other communicable diseases	626	22,520	527	17,560	91	4,445	8	515
Maternity	170	5,230	141	4,635	28	580	1	15
Infant and preschool	232	9,070	196	8,150	36	920	----	----
School	213	12,305	159	8,675	54	3,630	----	----
Crippled children	370	16,940	252	12,530	104	3,650	14	760
Dental	225	10,525	147	7,510	71	2,605	7	410
Nutrition	129	4,840	93	3,600	30	1,140	6	100
Heart	147	6,750	105	5,095	41	1,610	1	45
Diabetes	77	3,075	60	2,635	16	420	1	20
Cancer	597	22,420	403	16,065	192	6,300	2	55
Mental health	288	10,865	191	7,995	97	2,870	----	----
Medical care	104	3,260	86	2,695	17	545	1	20
Industrial hygiene	579	16,265	450	13,030	128	3,215	1	20
Milk and food sanitation	65	2,525	45	1,805	19	700	1	20
Water and sewage	51	1,170	16	555	32	580	3	35
Rodent and insect control	19	440	9	235	10	205	----	----
Other environmental health programs	76	2,650	30	1,160	45	1,470	1	20
Accident prevention	12	540	8	375	4	165	----	----
Laboratory	704	26,450	381	15,655	317	10,680	6	115
Public health statistics	113	4,890	74	3,505	38	1,355	1	30
Hospital facilities	362	16,095	232	11,370	125	4,415	5	310
Housing	17	680	5	200	12	480	----	----
Chronic diseases	32	2,225	21	755	11	1,470	----	----
Geriatrics	3	85	3	85	----	----	----	----
Local health services	171	6,955	118	4,970	51	1,625	2	360
Preventive medicine	18	1,005	16	945	2	60	----	----
Drug and narcotic control	9	470	4	220	5	250	----	----
Licensure divisions	22	1,030	9	480	13	550	----	----
Disasters and emergencies	28	525	15	295	13	230	----	----
Personal	155	5,260	8	120	91	2,090	56	3,050
Multiple screening	2	180	1	120	1	60	----	----
Maternal and child health	203	8,545	163	7,020	39	1,460	1	65
General sanitation	25	1,800	17	825	6	315	2	660
Training	22	420	10	175	12	245	----	----
Vocational rehabilitation	1	60	----	----	1	60	----	----
Unspecified	6	150	----	----	2	70	4	80

Reports of the medical directors varied widely on the extent to which medical judgment was involved. This was true both for types of programs and for percentages of total time per program. When all programs are considered, medical judgment was involved 70 percent of the time.

The 13 programs representing the greatest total time and the extent to which medical judgment was involved in each of the programs are shown in figure 3. These programs were also among those having the greatest number of occurrences., The participants reported that

SELECTED *PROGRAMS* INVOLVING MEDICAL JUDGMENT

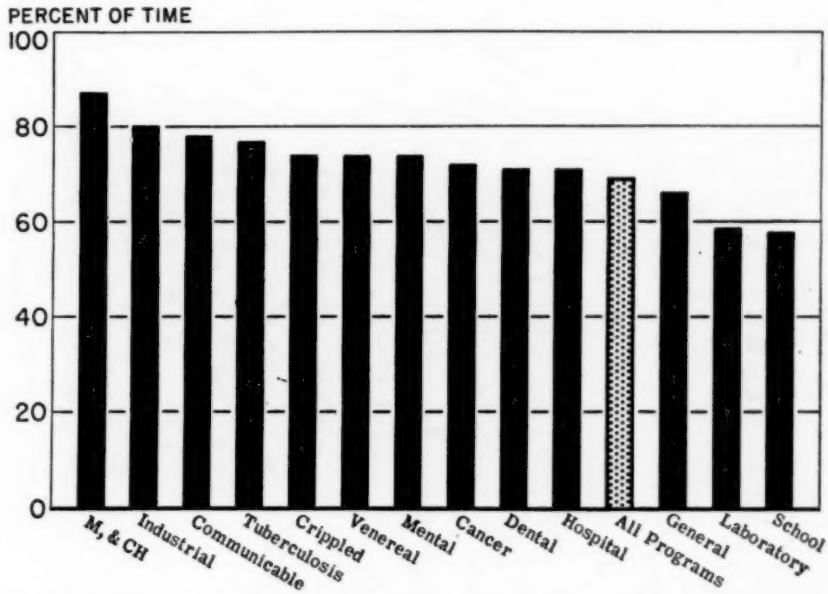


Figure 3. Percentage of time involving medical judgment spent in selected programs as reported by medical personnel in administrative positions in State health departments who participated in the study of activities.

87 percent of the time spent in maternal and child health, exclusive of the crippled children's services, involved medical judgment; industrial hygiene showed 80 percent, communicable diseases 78 percent, and the tuberculosis program 77 percent. The six programs next in order, crippled children, venereal diseases, mental health, cancer, dental health, and hospital facilities, range from 74 percent to 71 percent. The general program, which leads in number of activities and total time, ranks eleventh in percentage of time which involved medical judgment. A few programs showed a higher percentage of time in which medical judgment was involved, but too few occurrences were reported to justify their inclusion.

In many areas of service and in States where personnel is limited, the available medical administrative personnel may carry responsibility for more than one operating program. With the trend toward generalization of public health activities, a broad basic knowledge and awareness of all services is advantageous. An analysis was made to determine to what extent the activities of division directors cut across fields other than those of their specialties. Figure 4 indicates the type of programs in which medical personnel in administrative positions reported some participation during the study.

The detailed analysis revealed that State health officers, directors of local health administration, district health officers, and directors

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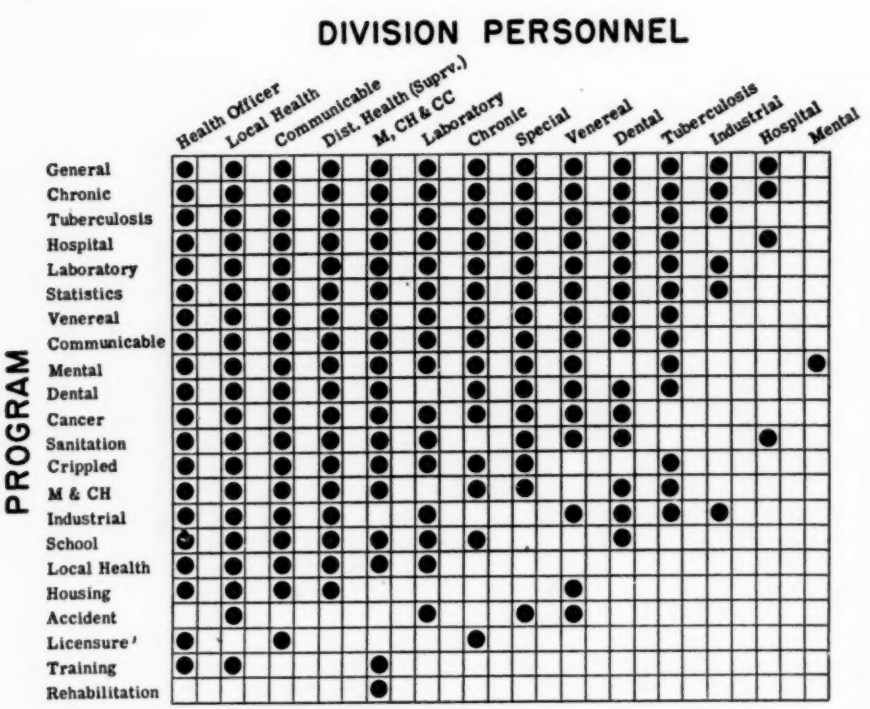


Figure 4. Types of programs in which medical personnel in administrative positions in State health departments reported participation during one week in December 1949 or January 1950.

of special services reported activities in almost every program. Analysis of the remaining 10 categorical programs revealed that 62 percent of the time in these programs was spent in the special field represented, while 38 percent was distributed over the various remaining programs. Any activity that concerned more than one program was reported under general. Sixteen percent of the time of these 10 divisions was reported in this category. If this general time is considered to relate primarily to the categorical program, it would still leave 22 percent of the time in which directors of categorical programs were involved in other than their own specialties. The directors of mental health reported that all their time was spent on mental health; directors of tuberculosis reported 90 percent of their time in the tuberculosis program; directors of industrial hygiene reported that 89 percent of their time was spent in their own field; laboratory directors reported that 85 percent of their time was devoted to laboratory programs, and maternal and child health and crippled children directors worked in their own specialties 55 percent of their time.

Activities

Activities, which for the purpose of this study are the components

of operating programs, have been tabulated with reference to time and occurrence. Thirty-eight specific activities occurred 10,838 times. The most frequently reported activity was handling correspondence, which occurred 1,583 times. Individual conferences were next, being reported 1,480 times, followed by telephone with 1,430. These three activities represent 41 percent of the total number of reported occurrences for all activities. The three next highest were program planning, occurring 783 times, records and reports with 729 occurrences, and travel with 725. Together with the three highest, these six activities include 62 percent of all occurrences (table 1).

The greatest amount of time reported for a single activity was 56,430 minutes for travel. Handling correspondence was second with 53,330 minutes. One activity, research, was recorded four times with a total of 720 minutes reported, or an average of 180 minutes for each occurrence. This was the greatest average time for any activity. The second highest in average time was field investigations with 126 minutes for 51 occurrences, totaling 6,420 minutes. The total time reported for the five activities, travel, handling correspondence, individual conferences, group conferences and program planning, represented more than half of the total time reported. If the seven activities reporting the next highest amounts of time, namely, records and reports, direction and supervision, preparation of educational materials, clinic participation, self-improvement, telephone, and meetings attended are added, these 12 account for 78 percent of the total time reported for all activities.

When activities are considered with reference to the amount of time in which medical judgment is or is not involved, there are four for which all time reported was considered by the participants to involve medical judgment. These are film interpretation, hospital plans and specifications, research, and tuberculin testing. Participants in the study reported also that essentially all time for clinic participation and professional consultation involved medical judgment. Next in order of rank are talks given with 97 percent, field investigations with 94 percent, and formal teaching with 92 percent of the time reported as involving medical judgment.

Figure 5 shows the percentage of time that involved medical judgment as reported for selected activities, the average for all being 70 percent. In this grouping, 87 percent of the time for program planning and 85 percent of the time spent in preparation of educational materials involved medical judgment, as did 83 percent of both group conference time and correspondence; 79 percent of the time spent for self-improvement, 76 percent for direction and supervision, and 67 percent for telephone were recorded as involving medical judgment.

All activities reported involved some medical judgment. Seventy-

SELECTED *ACTIVITIES* INVOLVING MEDICAL JUDGMENT

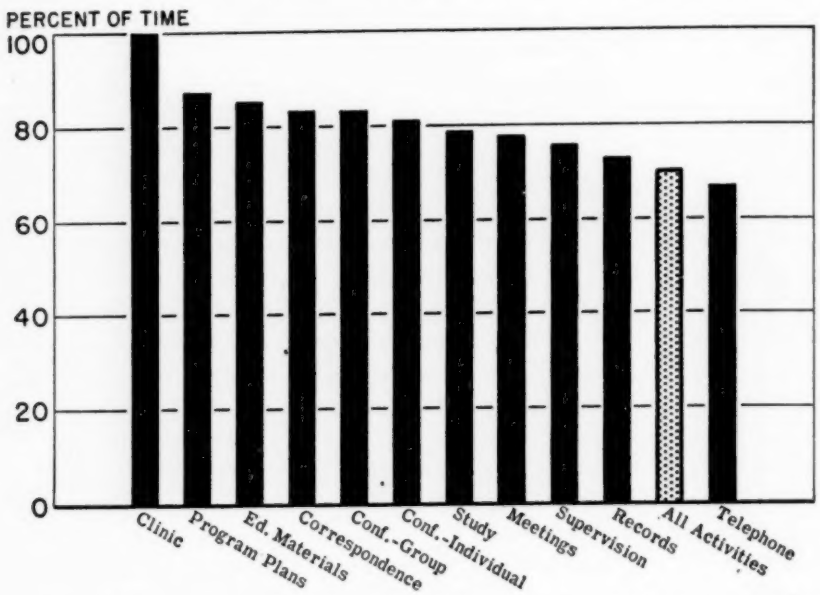


Figure 5. Percentage of time involving medical judgment spent in selected activities as reported by medical personnel in administrative positions in State health departments participating in the study of activities.

four percent of the time spent on housing did not involve medical judgment; travel time was second with 69 percent; purchasing was next with 56 percent, and checking or supervising equipment also took 56 percent of the time.

When the activities reported as not involving medical judgment are considered (exclusive of travel and personal time), nine activities account for 76 percent of the time so reported; 13 percent was spent on individual conferences; 12 percent on correspondence; 10 percent on group conferences; and 10 percent on records and reports. Seven percent of this time was spent on personnel activities and 6 percent each on budget and fiscal, telephone, program planning, and the direction and supervision of personnel.

Summary

This study of the programs and activities conducted by 173 medical administrative personnel in State health departments is the first of its kind ever reported. It has been made possible through the conscientious and unstinting cooperation of the participating State health departments and their medical personnel.

On the basis of the fairly comprehensive list of activities carried on by the reporting medical administrative personnel and the determina-

tion by the respondents of those activities which involved medical judgment, information has been made available which should be useful in the construction and review of curricula offered medical public health personnel in schools of public health. It should be of value not only in administrative, personnel, and program planning operations in departments themselves, but also in the fields of recruitment and placement, orientation and training, review of job specifications for positions already established, and the preparation for positions being planned in both general and specialized programs. The information should also be useful in determining not only what kinds of academic preparation would be desirable, but also what kinds of experience in public health work would seem to be most suitable.

The data revealed that medical administrative personnel in public health spend appreciable amounts of time in programs other than their own, even when their own is in a well-defined and well-organized special field for which the disciplines, duties, and responsibilities have long been established. It appears therefore that the traditional concept that categorical program division directors get experience in but one field needs revision.

Although the results of the study do not point to any single activity or group of activities which can be definitely marked as suitable under all circumstances for delegation to nonmedical adminstrative assistants, it is evident that there are certain types of activities which were frequently considered as not involving medical judgment. The delegation of such activities to competent nonmedical administrative personnel would in some instances involve the employment of such personnel. On the other hand, examination of the resources of a department might disclose that these duties could be assigned to persons already employed. It might also be found that by pooling certain activities in which medical judgment is not involved, as now carried on by several medical administrators, there would be a full-time position which would warrant the addition of a well-trained nonmedical administrative assistant.

The maximum utilization of the assistance of nonmedical administrative personnel is necessarily dependent upon their availability and competence. The activities reported as not involving medical judgment should serve as guides in planning the recruitment and training of nonmedical administrative personnel.

Postgraduate schools might well consider the potential market for trained nonmedical administrative personnel, for State health departments are but one group that might profitably employ them.

If physicians could be relieved of the administrative details which do not involve medical judgment, it would serve to stretch available medical manpower and would make public health careers more attractive to physicians.

Nutrition and the Control of Chronic Disease

—Public Health Aspects—

By Richard W. Vilter, M.D., and Carl Thompson, M.D.*

The greatness and stability of this Nation and of the world depend upon the high productive capacity of its people. Good health—both mental and physical—is essential in order that people may work efficiently and happily and enjoy the fruits of their labors. The science of medicine has done much to control infectious diseases, although morbidity and mortality from virus diseases still remain a problem. Medicine and its allied sciences have increased greatly the age expectancy of the child and to a lesser extent of the adult. Life has been prolonged far beyond the expectations of 50 years ago, but many times disease has made such inroads upon the person that he is incapable any longer of making a contribution to society.

Only too frequently life has been prolonged without health or happiness, and a chronically ill person finds that he is dependent upon his more productive fellows for his very existence. At least one-third of the time that chronic illness strikes it leads to incapacity during the fourth to sixth decades of life which, in our society, should be man's most productive years. The prevention and control of disabling chronic diseases such as arteriosclerosis, vascular hypertension, cancer, arthritis, diabetes mellitus and other metabolic disorders, chronic infections, and degenerative kidney and liver diseases have become a major challenge to the medical profession and health agencies.

The approach to these problems is complicated by the fact that these diseases are of unknown etiology. Hereditary factors are very important, but by and large the occurrence of these diseases is governed by the life habits of the people affected. If nutrition plays a role, it does so through indirect channels. A possible relationship of nutrition to diseases which have hereditary features is described in the Concept of the Genetotrophic Disease (*1*). Such a disease may occur if a diet fails to provide a sufficient supply of one or more nutrients required in large amounts because of the characteristic genetic pattern of the individual concerned. There is a considerable body of evidence suggesting that the common degenerative diseases may be of this type and that nutritional factors may play a role in their genesis (*2*). A person may be born with the capacity to carry on certain metabolic reactions only when a very

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large amount of one or more nutrients is available—an amount much greater than that which usually is found in an "adequate diet." If this large amount is not available, the metabolism of cells and tissues suffers over a number of years. Depending on the type of metabolic defect, one or more of the chronic diseases may appear at a relatively early age. If the nutrient is provided by artificial means in the required amounts, the metabolic defect may have no serious consequence.

If habits of living are important in determining whether chronic diseases develop, then nutrition again enters the picture. One of the most tenacious of such habits has to do with the selection of food and way of eating. This habit is formed in infancy and childhood and may at this early age lay the foundation for good or ill health.

Although the etiologic relationship of malnutrition to these chronic diseases is still highly theoretical, adequate nutrition may play a considerable role in preventing their appearance, delaying their onset, and slowing their course. The preventive aspects of adequate nutrition on chronic disease are in many instances clearly established and of very real importance. The maintenance of adequate nutrition in the face of chronic disease can do much to slow the progress of the disease and preserve a certain amount of self-sufficiency in those people who have a chronic disease. Basic research is demonstrating that the science of nutrition may have even more fundamental bearing on the problem, but this science has yet to define the full meaning of the term "adequate diet." The question may rightly be asked "Adequate for what?" It is possible that a diet adequate for growth and development or for the reparative stage following injury or illness may actually be overabundant for the healthy adult.

Only a beginning has been made in the study of the impact of nutrition on chronic disease, but it is imperative that those responsible for guarding the public health make use of and disseminate whatever knowledge is available and stimulate research along these lines (*3*). For this reason, we are recounting what is known about this subject and suggesting avenues for investigation which would appear to be most logical.

Prevention Through Adequate Nutrition

It is well known that obesity and undernutrition (in calories or in essential nutrients) may predispose to certain chronic diseases and accelerate their course. Obesity, which in the great majority of cases is due to overeating and a sedentary life (*4*), places an excessive load upon carbohydrate metabolism and frequently precipitates the appearance of diabetes mellitus and accelerates its course. Obesity also places an excessive load upon the cardiovascular system and, through this strain, may accentuate hypertension and accelerate the

appearance of arteriosclerosis. Excessive weight, which must be borne by the large joints of the body, accelerates the appearance of hypertrophic arthritis and adds to the suffering of the patient who has rheumatoid arthritis. It also greatly increases the difficulties and dangers of surgical operations, yet it exerts a positive influence on the occurrence of cholelithiasis and cholecystitis, two major indications for surgery. Obesity may precipitate the appearance of abdominal and diaphragmatic hernias and, by increasing clumsiness, may make persons accident prone. Obesity is a considerable hazard to good health, and, because it is so common it has a very great bearing on the incidence of chronic disease.

Obesity is always due to intake of food in excess of energy output. Once a person has become obese, he will remain so as long as energy intake and output balance. Constitutional factors which have to do with the efficiency of the human body as a machine may increase the ease of weight gain, although the existence of such factors is denied by many competent investigators and experimental evidence of their importance is still lacking. Endocrine factors rarely play a part. When they do, they have their effect through an increase in appetite, and there are many other florid signs of endocrinopathy. Factors which tend to lead people into the habit of overeating are of utmost importance. They are most often psychological.

In order to control obesity, instruction in the correct selection of foods and in the value of controlled exercise is imperative. A reduction in caloric food intake below caloric energy output for any given period of time is essential. Usually, a 1,200 calorie diet adequate in protein, vitamins, and minerals will suffice for a moderately active person; a sedentary person may need to be put on a 1,000 or 800 calorie diet. From the public health point of view, it may be necessary to change the food habits of general population groups in order to bring about general weight reduction. Improvement in mental health is almost always necessary, for often the obese person overeats as a substitute for normal pleasures and gratifications which are lacking. Oral gratification—one of the earliest pleasures of infancy—is difficult to combat and frequently the entire life situation of the patient must be improved before reduction in weight can be accomplished, or once accomplished, can be maintained.

Twenty-five to 30 percent of adult persons in the United States are obese. The percentage may reach as high as 60 percent in women of the 50- to 70-year age group. The death rates of persons over 45 years of age who are 10 to 90 pounds overweight are, respectively, 8 percent to 116 percent greater than those in persons of normal weight. The incidence of diabetes mellitus is two and one-half times as great and cardiovascular-renal disease one and one-half times as great in the obese as in those of average weight (*5*, *6*). A

public health campaign might well be directed against this very real threat to the national well-being. Mass psychology might work where individual doctors fail.

Excessive leanness, or underweight, due to caloric restriction, although protective from some of the chronic diseases previously listed, nevertheless is a hazard because it predisposes to pulmonary tuberculosis and other chronic lung diseases. Rats on diets very low in calories but adequate in protein, vitamins, and minerals may live much longer than rats which receive a complete diet (*7, 8*). The life span of human beings has never been prolonged by such means because acute and chronic infections take their toll before even the normal life span has been reached. Anorexia nervosa, a most excessive form of weight loss due to loss of appetite on emotional grounds, may induce serious disability in the osseous, endocrine, ocular, and vasomotor systems which cannot be completely repaired even though the underlying psychiatric problems are solved and weight is regained.

Severe deficiencies in specific essential nutrients have accounted for much chronic illness in the past. Mild, subclinical deficiency states are still very numerous, even though such full-blown deficiency diseases as pellagra, beri-beri, and scurvy have been all but eliminated by extensive educational campaigns, by improvement in the standard of living of the lower income groups, and by such public health measures as the enrichment of white flour with essential nutrients previously removed during the milling process. The incidence of these illnesses and the effect on the health of the general population is still unknown, but it is probable that such mild deficiencies account for a great deal of chronic mental and physical ill health.

Certain possible effects of such chronic mild deficiencies may be pointed out. The deleterious effect on the gums of chronic deficiencies of the vitamins of the B complex and of vitamin C may predispose to infection and to pyorrhea, and therefore early loss of teeth. Chronic deficiencies of niacin, folic acid, or vitamin B-12 predispose to chronic atrophy of the mucous membranes of the tongue and upper gastrointestinal tract, particularly the stomach. This condition may lead to leukoplakia of the tongue and atrophic gastritis, both of which are precursors of neoplasms.

Deficiencies or dietary imbalances in iron, folic acid, vitamin B-12, vitamin C, and other related substances are the most important known factors in the development of nutritional anemias. Inadequacy in protein intake may also be important in this regard. Deficiencies of trace elements, particularly of iodine, also are important. The effect of dietary iodine on the incidence of endemic goiter is well known, and abnormalities in thyroid metabolism may be the direct result of iodine lack.

Finally, excesses of certain substances may also be injurious to good

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health and precursors of chronic illness or physical defect. The ingestion of excessive carbohydrate, causing stimulation of the activities of certain lactobacilli in the mouth, may be one of the factors responsible for excessive decay of teeth, just as deficiency of fluoride may injure the tooth structure. Excess of alcohol in beverage form replacing the calories of vitamin rich foods is one of the chief etiologic factors in the development of severe deficiency diseases today. It is also an important factor in the development of nutritional cirrhosis, which in turn may be a precursor of carcinoma of the liver. Excess of alcohol in a person deficient in thiamin and perhaps in vitamin B-12 may lead to severe peripheral neuritis which can account for long periods of pain and disability. Thus, too much or too little food or its component nutrilites may interfere seriously with good health and may predispose to and accelerate the course of chronic illness.

It is of paramount importance that attention be directed to the nutrition of expectant mothers, for the nutrition of the mother largely determines the good health and general resistance of the child at birth. Unless nutritional inadequacies engendered in utero are made up rapidly after birth, the growth and development of the child may be impaired and he may become subject to chronic illnesses which impair his efficiency for the rest of his life.

Another instance wherein an ounce of prevention is worth a pound of cure is in the management of acute infectious hepatitis and homologous serum hepatitis. In each such instance, rest and a high protein, high carbohydrate diet rich in essential nutrients will do a great deal to prevent the occurrence of chronic hepatitis and postnecrotic cirrhosis.

Care and Rehabilitation of Persons With Chronic Disease

Persons with chronic disease whether at home or in institutions can be benefited by an adequate nutritious diet served in a palatable fashion (*9*, *10*). Such a diet should be divided into three small meals a day supplemented with three interval feedings of milk, eggnog, or fruit juices. One or two ounces of a protein hydrolysate may be added to the milk or eggnog. Anorexia will be counteracted; strength, morale, and appetite will be improved, and the patient's energetic cooperation in physical rehabilitation methods will be gained.

Those with diabetes mellitus will be more able and willing to control their disease if they are given a diet which will bring them to normal weight for height. With the help of insulin, they will then be able to eat essentially the same type of meals as their friends and fellow workers. Whether the urine contains small amounts of sugar at any particular time is relatively unimportant.

The patient with chronic congestive heart failure can be greatly

improved if his diet contains one gram or somewhat less of sodium per day and is high in protein and other essential nutrients. The emphasis should be on small feedings and upon maintenance of a normal or slightly lower than normal weight. Patients with rheumatoid arthritis and hypertrophic arthritis will usually improve with rest and a diet which reduces weight to a normal level for height and yet provides adequate protein, mineral, and vitamin content so that strength and morale are improved. Under these circumstances, they are better able to cooperate with physiotherapy and to help in their physical rehabilitation.

In the case of patients with tuberculosis or other chronic lung diseases of an inflammatory type, the new antibiotics have not displaced rest and a high caloric, high protein adequate diet. Probably the example par excellence of the value of nutrition in the control of chronic disease can be found in the management of fatty liver and nutritional cirrhosis. Of all therapeutic measures which can be applied, the high protein, high carbohydrate diet with protein content between 150 and 250 grams per day is of greatest importance. Under these conditions serum albumin frequently can be raised, edema and ascites decreased, and regenerating liver cells can be allowed to take over the normal hepatic function.

In the spring and the fall seasons, particularly, the nutrition of patients with chronic disease must be carefully guarded. At these seasons, the symptoms of specific vitamin deficiency diseases are most likely to appear, as they do in regions where pellagra, beriberi, and scurvy are endemic. The metabolic changes which account for this phenomenon are unknown.

Nutrition Research and Chronic Disease

General problems in the incidence and control of obesity should be investigated. A better definition of obesity is needed. It is possible that an apparently obese person may not be overweight, and that a person of normal weight may have an excessive amount of fat. Data should be collected upon the incidence of obesity in various population groups, and the relationship of dietary habits, environment, and psychological problems to obesity should be investigated.

The older data on the incidence of goiter needs revision. The diagnosis of subcritical vitamin deficiencies is extremely difficult, either by clinical appraisal or by laboratory methods. Yet it is most important that the incidence of such deficiencies in the general population be known and the reasons for such deficiencies be discovered. Additional research in the field of laboratory diagnosis is needed, and careful surveys of population groups should be made in different parts of the country. In such surveys, attention should be paid particularly to the quality of the soil which produces the food, the quality of the

food consumed, and the incidence of subclinical deficiency patterns. In addition, the occurrence of chronic disease in habitually deficient families should be examined.

In the field of more basic research, efforts should be continued to develop methods to learn more about the chemistry of cellular growth and development. This is a field in which nutrition becomes intimately related to the problem of the control of malignant tumors. Work must be continued upon the effect of antimetabolites or antivitamins in the control of tumors—particularly the leukemias—and to discover new methods for controlling growth of cells.

The relationship of cholesterol and fat to the genesis of arteriosclerosis requires continued investigation, even though these nutritional factors may be of only secondary importance to the occurrence of degenerative vascular disease. The relationship of the nutrition of the host to the occurrence of infectious disease also requires continued investigation. Much more work is needed on the problem of nutrition and tooth development from the period of intra-uterine life to old age. These are only a few of the many fruitful fields in which nutrition, biochemistry, and clinical medicine meet.

The chronic disease problem and the aging of tissue are closely related. They are so important to this country and to the entire world that every effort should be made to understand them and bring them under control. Nutrition must be as important to the process of aging of tissue as it is to growth and development, yet only a very small beginning has been made in this field. Aging need not be synonymous with degeneration. Satisfactory nutrition throughout life has the best chance of making such a separation a reality.

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Cultivating Community Relationships in a Mental Health Program

By Herbert L. Rooney, M.S.S.W.*

The trend toward community participation in health programs has pointed up the unique contribution the social worker can make in fostering community interest and action. The social worker, who has a knowledge of community organization, understands the part the people in the community can take in programs aimed at preventing illness. He accepts their interest in mental health, and he accepts, particularly, their ideas in terms of a program.

Although we are primarily concerned here with the social worker's development of community relationships in a mental health program, many of the community organization skills and attitudes may be applied in some measure by any staff member of a health agency working with the community.

All too frequently the staff member, in his zeal to see his program become a reality in the community, loses sight of the important aim of helping the community attack its own health problems.

In psychiatric case work, the social worker helps the individual patient face the realities of his own problem and, together with the individual, plans for an effective remedy within the scope of the patient's capacities. Similarly, the community must be helped to develop an awareness and understanding of a problem, but it must be free to select its own methods of coping with the situation. If a community health program is to be all embracing, self-sustaining, and an integral part of the community's life, it must come from within, in the democratic group process.

On the other hand, if a health program is autocratically imposed on the community by any agency, the program necessarily becomes dependent upon that agency for its execution and continuance. This means stifling community interest and initiative, both of prime importance in the community's attack on its own problems. For, when we speak of the community we are speaking of people, and this implies a day-to-day relationship with the community. Care must be exercised, therefore, lest a plan be chosen for, rather than by, the community.

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Community Acceptance

While much thought and planning is devoted to determining better methods of understanding the community, there is need to focus on the type of relationship between social worker and community which will encourage community participation in plans and action. What makes the probation officer take time from his busy day to stop in at the clinic? Is there a "special" response the club woman anticipates when she telephones to discuss her ideas for a community-wide program of health? Why does a Parent-Teacher Association chairman feel free to seek program help? Although the individual in these instances may respect the training and specialization of the social worker, he wants to feel free not only to admit his perplexities but also, which is of the utmost importance, to communicate his suggestions. When this occurs, many would conclude merely that the community accepts the social worker's services. This acceptance, however, is reciprocal, and it is the worker's initial acceptance of the community which results in full use of his skills.

Frequently asked is how can the health department or community clinic manifest its acceptance of the community. In arriving at an answer, again we center on the approach to people by the social worker employed by the health department or clinic. Here is a major area of contact with the community, and here it is that the social worker sets the pattern for future use or misuse of his agency, for community cooperation or apathy, and for community resourcefulness or inertia. A genuine warmth communicated to people, an appreciation of their interests and their questions and ideas on community health are basic attributes to community work. The social worker also needs to be aware that groups may need help with programs they have chosen and do not want any substitutions which he might suggest. He should utilize the community's facilities as they are instead of proclaiming their inadequacies. The social worker's cooperation with, response to, and acceptance of the individual and the group are reflected in the community's acceptance of the health department or clinic identified with him. Assuming the existence of this mutual acceptance, what are some other values to be derived from this relationship?

We now see a growing acceptance by the public of mental health programs. As the individual is reassured by an understanding approach and appreciation of his individuality, so also does the community derive reassurance about mental health programs from the social worker's approach.

Work With Groups

In all health programs, it is important to have a thorough knowledge of the existing services and facilities in the community—such as the

services provided by nurses, doctors, teachers, social agencies, courts, hospitals, and PTA's. These groups and individuals represent the front-line troops in the community since they are in intimate contact with the community's problems. Effective utilization of these groups is essential in welding a unified community health program. This can be achieved if the social worker is willing to cooperate with these groups, to recognize the value of their contributions, to help them carry out their own activities more effectively, and to share with them in total planning.

To do this, the social worker ought to be available for consultation about patient referrals, community health problems, community agency follow-up of patients, school problems, PTA and community program planning, and parent discussion groups. This availability for consultation not only offers the means of assisting groups to work more effectively toward achieving the community's total health program, but also enables the social worker to interpret the principles of health.

Unfortunately, the opportunities inherent in a consultation program are often overlooked in the day-to-day contacts with community groups. This oversight was observed in a community in which a neighborhood group of young mothers was interested in organizing a discussion group and sought program suggestions from the representative of a local health agency. The group's initiative and independence were stifled by this inexperienced individual who suggested that such a program would be under his direction and would have to follow his program exactly. These women, feeling that the representative of the health agency was critical rather than helpful, soon abandoned their plans for a discussion group.

The importance of the community's contributions to the promotion and continuance of a health program has been stressed by the staff of the Prince Georges County Mental Health Clinic. In this demonstration clinic, working within the county health department, all staff members, clerical as well as professional, are "community minded" and, therefore, cooperate fully with varied community groups. Here the social worker has a prime responsibility for developing numerous community relationships through discussion of clinic intake policies, through patient referrals, and through follow-up of patients by means of cooperative planning with community social or health agencies. He also replies to requests for information about the clinic's total program, assists in program planning for community clubs, participates in discussion groups, and offers suggestions for meeting neighborhood problems.

Although community agencies can contribute to a mental health program by referring patients for psychiatric help, the mental health clinic social worker, by working closely with the agencies on cooperative

treatment plans, can enhance their role in the community. Extending the utilization of an agency's services is one method of strengthening existing resources in a total community plan, as illustrated in the following case.

The Case of Mr. S.

One of the county's vocational counselors had referred Mr. S. to the Mental Health Clinic for out-patient treatment prior to a possible job transfer. The patient, 38 years of age, had shown symptoms of nausea, tension, inability to concentrate, and apathy, over a period of years, on several different jobs. Mr. S. was married, had four children, and at time of referral was employed as a maintenance helper, receiving an inadequate salary to support his family. Although emotionally secure in his present employment and free from symptoms, he wanted a higher salary. However, he feared a recurrence of symptoms if he changed jobs.

The counselor believed Mr. S. was an unusually capable worker and was anxious to place him in a job commensurate with his ability. Evaluation at the clinic revealed the patient to be a highly intelligent, conscientious, deliberate, and systematic person; in psychological tests he scored particularly well on arithmetic, reasoning, and memory questions. Previous history revealed his symptoms always appeared when he was placed in positions carrying responsibility for the work of other people, in situations which were not orderly and routine, and which called for frequent contact with people. The clinic felt that this patient probably would do best in a job in which he would not have to delegate tasks to subordinates and in which systematic attention to detail, organization, and routine were important. Because of his indecision, it was particularly important that Mr. S. be given a good deal of time to decide for himself about job opportunities offered by the vocational counselor.

During several conferences with the vocational counselor, the social worker interpreted the patient's difficulties, his need for a specific type of vocational placement, and particularly emphasized Mr. S.'s need for ample time in making a definite decision about the employment change. As a result, the counselor refrained from offering Mr. S. specific job opportunities and from urging him to make a hasty decision. The counselor's approach became one of suggesting kinds of possible job situations. Upon the patient's request, the vocational counselor contacted a Government employment specialist and interpreted Mr. S.'s needs in much the same manner as the social worker had originally. In subsequent work on vocational plans he avoided exerting pressure on Mr. S. to accept a position requiring a high degree of responsibility.

Note that an important goal of the social worker was extending

assistance to the counselor in helping him achieve the solution to Mr. S's problem. Numerous similar opportunities arise from cooperative planning with teachers, nurses, social workers, physicians, clergymen, and others. Even a telephone inquiry from a community source about how to refer a particular patient offers the social worker the opportunity of suggesting how the clinic's function may be interpreted to the prospective patient; this, in turn, increases the community agency's understanding of mental health. The school is another example of a potential resource for helping the community develop a mental health awareness and program. Conferences with a visiting teacher, principal, or classroom teacher result in working together to better understand the emotional impact of school on children and to increase awareness of the valuable role of the school in the child's emotional as well as intellectual development.

School Schedules

In an informal meeting with the faculty of a rural school, the social worker noted that the teachers were thinking of the effect of the curriculum schedule on the children in their school. The problem peculiar to this area concerned the great distances pupils traveled to and from school. Because of early breakfasts, they became inattentive and restless during the 11 a. m. class. The principal discussed the possibility of a brief mid-morning snack to break the long physical and emotional strain of the school day for the children and teachers as well. This type of mental health conference with the school, while apparently centered on curriculum schedules, illustrates the development of improved teacher attitude and their understanding of the effects of school on children. This is but a beginning process out of which may come further opportunities for a more direct focus on mental health needs within schools.

Club Programs

The social worker is frequently asked to speak before lay groups in the community or to help in program development in organizations interested in mental health. Members of these groups can be very influential in advancing plans for a mentally healthy community. They are the John Smiths and Mary Browns who are not clinic patients but who are interested in discussion of the fundamentals of mental health. They are the mothers and fathers anxious to exchange comments with the social worker about bringing up their children in the best manner possible. What approach can be used in meeting these requests? What purpose can one talk fulfill? Should the social worker lecture to the group and, as the authority, answer all questions, or join with the group as a discussion leader? Which of these methods is more effective?

Recognizing the difficulty of answering these questions unaided, the social worker at the Prince Georges County Mental Health Clinic decided to seek the answers within the community itself. The following experience may serve as an illustration.

The social worker was asked to talk before a group of parents whose children attended a cooperative nursery school located in a large apartment development. Since the program chairman did not have a specific topic in mind, the worker suggested a meeting with the program committee to discuss more fully a subject which would have particular interest for the audience. The meeting was arranged, and the committee decided a topic covering healthy family relationships in apartment house living would be particularly appropriate. The members responded enthusiastically to the suggestion of a panel which would include a resident physician and a father as well as the social worker.

The response of the committee and, later, the audience participation seemed to justify the approach used in meeting the initial request. However, other questions were also answered in experience with the same group.

Aids Study Group

The program committee, pleased with the preliminary meeting with the social worker and the panel presentation, again sought assistance. For some time, mothers of children enrolled in the nursery school had been meeting monthly in a cooperative child-study session. The program had consisted primarily of reports by individual mothers on child-care books, followed by group discussion. The committee observed that the group was losing interest and sought suggestions for stimulating the program. The social worker felt the practice of discussion among the mothers provided an excellent basis for furthering the program through use of a discussion leader. It was suggested that the Mental Health Clinic might cooperate with the group in a series of four discussions on everyday problems of child care, led by a different staff member on each occasion. In return, the group could be of help to the clinic in evaluating this discussion method. It was agreed the discussions would include early growth and development problems, problems of learning, environmental adjustment, and emotional growth. The committee with considerable enthusiasm then set up a schedule of these monthly meetings.

During each of the four discussions, a staff member from the clinic talked for about 10 or 15 minutes. During the remainder of the hour-and-a-half period, the speaker acted as a leader, stimulating the group's participation in open discussion, encouraging the mothers to draw on their own experiences in answering questions, and aiming toward an objective discussion of mental health principles rather

than a subjective account of an individual problem child. The group was particularly responsive during all the meetings.

It appears in this instance that one talk had fulfilled a purpose not only of maintaining group interest but also of adding impetus to a widening interest in mental health. The mothers' group helped in commenting about the efficacy of the method of presentation used by the staff members.

The mothers held a special summer meeting of their own to evaluate the program and sent a report of group expression to the social worker. The gist of this report was: The meetings were of great value in giving the mothers more confidence in themselves because the meetings revealed (1) that "the authorities found many of their methods acceptable;" (2) that other mothers had similar problems; (3) that help can come from another mother with like experience.

Thus, the informal discussion method was found to be effective through cooperation of community and clinic.

The community at large has become aware of this experience with the mothers' study group and has expressed interest in further development of the plan. The welfare chairman of the women's clubs has begun to plan cooperatively with the clinic to initiate discussion groups of young parents among the county women's clubs. This would indicate one of the beginnings of a community mental health program. There is no end to the need for making the principles of mental health known and for utilizing the community to further this effort. The John Smiths and Mary Browns are now converting their interest in mental health into planned action; as citizens, they are recognizing their responsibility to help in the development of methods aimed at improving the health of all; and finally, they are joining with their neighbors and friends to achieve this aim.

Influence of Irradiation and Penicillin on Experimental Syphilis Transmission

By T. F. Probey*

Laboratory studies in experimental syphilis in rabbits have demonstrated that *Treponema pallidum* becomes avirulent and will not transmit syphilis when present in blood kept under blood bank conditions for 96 hours (*1*), or when in plasma processed to the dried state (*2*). The recent report by Ravitch, Farmer, and Davis (*3*) demonstrates that under these conditions blood from donors with syphilis should be acceptable for use. The hazard of transfusion syphilis may, therefore, be minimized by the routine processing of blood or blood products. However, the danger still exists in emergency transfusions with freshly drawn blood from syphilitic donors. There is danger of transmitting syphilis with fresh blood from donors in any stage of the disease, but the greatest danger is during the preclinical serologically negative stage of the infection. Kast, Peterson, and Kolmer (*4*) recorded one case of transfusion syphilis from a donor in the incubation period, while Eichenlaub, Stolar, and Wode (*5*) reported that of 41 cases, 6 resulted from donors in the incubation period and 9 from serologically negative donors with primary lesions which were undiscovered at the time of transfusion. In this connection it is interesting to note that Raiziss and Severac (*6*) demonstrated the presence of *T. pallidum* in the blood of rabbits within 5 minutes following testicular inoculation.

Prevention of transfusion syphilis when freshly drawn blood is used would require the use of a sterilizing agent, treponemicidal drug, or possibly irradiation. The use of trivalent organic arsenicals as treponemicidal drugs has been suggested (*4–5*) but has met with little acceptance. In 1939 Kast, Peterson, and Kolmer (*4*), using the arsphenamines, and in 1941 Eichenlaub, Stolar, and Wode (*5*), using mapharsen, demonstrated that these drugs were effective in the prevention of experimental transfusion syphilis.

In the present study the efficiency of penicillin and of ultraviolet irradiation was investigated as treponemicidal agents for the prevention of transfusion experimental syphilis in rabbits.

Experimental

The experimental procedure followed was the same as that used in previous studies in experimental syphilis in rabbits (*7*).

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The *T. pallidum* suspension was prepared from rabbits infected with the Nichol's strain of *T. pallidum* and showed a well-developed syphilitic orchitis, rich in organisms. Saline suspensions of the emulsified testicular tissue were filtered through sterile gauze and added to the blood or plasma under study. The material was then divided into equal parts, one to be used as the *T. pallidum* infectivity control and the remainder to be exposed to the sterilizing agent.

In the study of the efficacy of penicillin as a treponemicidal agent in the prevention of transfusion syphilis, crystalline penicillin G was added to the whole blood *T. pallidum* suspensions which were then kept in a refrigerator, simulating blood bank conditions. *T. pallidum* infectivity control blood suspensions were kept under identical conditions. Comparable groups of rabbits were inoculated with these blood *T. pallidum* suspensions.

To test the efficiency of penicillin as a treponemicidal agent in immediate transfusions, rabbits were inoculated 1 hour after addition of the drug. And, to test the action of penicillin within the maximum infectivity period of *T. pallidum* under blood bank conditions, rabbits were inoculated 1, 2, 3, and 4 days after addition of the penicillin.

In the first series, the penicillin concentration was 50 units per ml. of whole blood *T. pallidum* suspension. Rabbits were inoculated in both testicles with 0.5 ml. of the suspension. The results, shown in table 1, indicate that 50 units of penicillin per ml. did not prevent the transmission of syphilis. The infectivity of *T. pallidum* in the blood containing this concentration of penicillin was equal to that in the control suspension without penicillin.

To eliminate the possibility of asymptomatic syphilitic infection, all rabbits failing to develop evidence of syphilis were killed and tissue transfers from testicles and popliteal glands were made to normal rabbits 151 to 155 days after original inoculation. All transfer rabbits remained negative, free from evidence of syphilis during 127 days of observation.

Objections to this experiment are (1) the procedure did not follow

Table 1. *Efficiency of penicillin, crystalline G, 50 units per ml., for prevention of experimental syphilis by transfusion in rabbits*

Inoculation [1]	Controls			Penicillin, 50 units, per ml.		
	Number rabbits	Positive	Negative	Number rabbits	Positive	Negative
1 hour	2	2	0	2	2	0
1 day	2	2	0	2	2	0
2 days	2	0	[2] 2	2	1	[2] 1
3 days	2	0	[2] 2	2	0	[2] 2
4 days	2	0	[2] 2	2	0	[2] 2

[1] Injected Feb. 25 to Mar. 1, 1946; transferred after 151 to 155 days.
[2] Transfers negative during 127 days of observation.

transfusion methods in that the intratesticular route of infection was used; (2) the amount of penicillin was quite small, 50 units per ml.; and (3) the possibility of *in vivo* action of penicillin must have been practically nil because of the small amount, 1.0 ml., of the inoculum. The study was repeated as follows to meet these objections.

In the second experiment penicillin was added to the blood *T. pallidum* suspension at two-dose levels, 60 units per ml. and 6,000 units per ml. The rabbits were transfused by the ear vein with 7 ml. per kilogram of body weight of a blood *T. pallidum* suspension, and both testicles also were inoculated with 0.5 ml. of the same material.

The amount of the transfused blood *T. pallidum* suspensions, 7 ml. per kilogram, corresponds with the average single, 500 ml., human blood transfusion when the weights and blood volumes of rabbits and human beings are taken in consideration. The penicillin concentration at the higher dose level corresponds with the total number of units in a course of treatment for human syphilis, 3 million units. The lower dose level corresponds with that used in the first experiment.

Rabbit transfusion schedules were the same as those employed in the first experiment except that the transfusions were terminated after the third day. The results (table 2) indicate that rabbits transfused with 7 ml. per kilogram of whole blood *T. pallidum* suspension 1 hour after the addition of penicillin were not protected from transmission of experimental syphilis by either concentration of the drug used. When transfused 1 day after addition of penicillin, rabbits receiving blood *T. pallidum* suspensions containing 6,000 units of penicillin per ml. were protected, whereas those rabbits transfused with the suspension containing 60 units per ml. of the drug were not protected from the transmission of syphilis. Rabbits transfused with the infectivity controls for both of these categories developed syphilis.

As a further check on the possibility of asymptomatic syphilis, all rabbits failing to develop syphilis, and which survived 13 months of observation following transfusion, were inoculated in both testicles with virulent *T. pallidum* (the reinoculation test). Two rabbits with a history of syphilis following transfusion also were reinoculated as controls. Of the 19 negative rabbits subjected to the reinoculation test, 15 developed darkfield positive lesions. The two positive rabbits failed to develop evidence of syphilis.

The four rabbits that failed to develop evidence of syphilis following the reinoculation test had been transfused with blood *T. pallidum* suspension containing 60 units per ml. of penicillin. Presence of syphilitic infection in these four rabbits following reinoculation was established by tissue transfer. The source of the syphilis infection could not be identified, whether originating from the original transfusion or from the reinoculation test. However, the possibility that these four rabbits may have been immune by virtue of an asympto-

matic infection (*8*) transmitted by the original transfusion, as indicated by the negative reinoculation test, should be considered.

T. pallidum in the infectivity controls, blood *T. pallidum* suspension without penicillin, used in the first experiment becomes avirulent by the third day of storage, and those used in the second experiment, by the second day of storage under blood bank conditions.

Table 2. *Efficiency of penicillin, crystalline G, 60 units and 6,000 units per ml., for prevention of experimental syphilis by transfusion in rabbits*

Transfusion schedule [1]	Whole blood *Treponema* suspension with penicillin						Without penicillin (controls)		
	60 units per ml.			6,000 units per ml.					
	Number rabbits	Positive	Negative	Number rabbits	Positive	Negative	Number rabbits	Positive	Negative
1 hour	3	3	0	3	3	0	3	3	0
1 day	3	1	2	3	0	3	3	2	1
2 days	3	0	3	3	0	3	3	0	3
3 days	3	0	3	3	0	3	3	0	3
Reinoculation test of negative rabbits [2]	7	3	[3] 4	8	8	0	4	4	0

[1] Transfused (inoculated) Jan. 21 to 24, 1948.
[2] Reinoculation test Feb. 21, 1949.
[3] Subtransfer Oct. 20, 1949 (all positive).

In the study of the efficiency of ultraviolet irradiation as a treponemicidal agent for the prevention of the transmission of syphilis, the test materials were subjected to irradiation before transfusion of the rabbits.

Rabbit whole blood and rabbit plasma were inoculated with saline suspensions of *T. pallidum*, and both suspensions were divided into two equal parts, one of each to be irradiated and the other two, not irradiated, to be the infectivity controls. The plasma *T. pallidum* and the whole blood *T. pallidum* suspensions were subjected to ultraviolet irradiation in that order using the Oppenheimer-Levinson apparatus (*9*). The average exposure time to the ultraviolet light was 0.25 seconds for the plasma and 0.52 seconds for the whole blood. Two groups of rabbits were transfused in the ear vein with 7 ml. per kilogram and concurrently both testicles were inoculated with 0.5 ml. of the test material immediately following irradiation. The group receiving the nonirradiated control material was handled last.

The results (table 3) show that none of the seven rabbits transfused with plasma *T. pallidum* suspension exposed to ultraviolet irradiation developed syphilis. The six rabbits transfused with irradiated whole blood *T. pallidum* suspension developed syphilis. All the rabbits transfused with the nonirradiated *T. pallidum* infectivity controls, seven in each group, developed syphilis.

transfusion methods in that the intratesticular route of infection was used; (2) the amount of penicillin was quite small, 50 units per ml.; and (3) the possibility of *in vivo* action of penicillin must have been practically nil because of the small amount, 1.0 ml., of the inoculum. The study was repeated as follows to meet these objections.

In the second experiment penicillin was added to the blood *T. pallidum* suspension at two-dose levels, 60 units per ml. and 6,000 units per ml. The rabbits were transfused by the ear vein with 7 ml. per kilogram of body weight of a blood *T. pallidum* suspension, and both testicles also were inoculated with 0.5 ml. of the same material.

The amount of the transfused blood *T. pallidum* suspensions, 7 ml. per kilogram, corresponds with the average single, 500 ml., human blood transfusion when the weights and blood volumes of rabbits and human beings are taken in consideration. The penicillin concentration at the higher dose level corresponds with the total number of units in a course of treatment for human syphilis, 3 million units. The lower dose level corresponds with that used in the first experiment.

Rabbit transfusion schedules were the same as those employed in the first experiment except that the transfusions were terminated after the third day. The results (table 2) indicate that rabbits transfused with 7 ml. per kilogram of whole blood *T. pallidum* suspension 1 hour after the addition of penicillin were not protected from transmission of experimental syphilis by either concentration of the drug used. When transfused 1 day after addition of penicillin, rabbits receiving blood *T. pallidum* suspensions containing 6,000 units of penicillin per ml. were protected, whereas those rabbits transfused with the suspension containing 60 units per ml. of the drug were not protected from the transmission of syphilis. Rabbits transfused with the infectivity controls for both of these categories developed syphilis.

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matic infection (*8*) transmitted by the original transfusion, as indicated by the negative reinoculation test, should be considered.

T. pallidum in the infectivity controls, blood *T. pallidum* suspension without penicillin, used in the first experiment becomes avirulent by the third day of storage, and those used in the second experiment, by the second day of storage under blood bank conditions.

Table 2. *Efficiency of penicillin, crystalline G, 60 units and 6,000 units per ml., for prevention of experimental syphilis by transfusion in rabbits*

Transfusion schedule [1]	Whole blood *Treponema* suspension with penicillin						Without penicillin (controls)		
	60 units per ml.			6,000 units per ml.					
	Number rabbits	Positive	Negative	Number rabbits	Positive	Negative	Number rabbits	Positive	Negative
1 hour	3	3	0	3	3	0	3	3	0
1 day	3	1	2	3	0	3	3	2	1
2 days	3	0	3	3	0	3	3	0	3
3 days	3	0	3	3	0	3	3	0	3
Reinoculation test of negative rabbits [2]	7	3	[3] 4	8	8	0	4	4	0

[1] Transfused (inoculated) Jan. 21 to 24, 1948.
[2] Reinoculation test Feb. 21, 1949.
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In the study of the efficiency of ultraviolet irradiation as a treponemicidal agent for the prevention of the transmission of syphilis, the test materials were subjected to irradiation before transfusion of the rabbits.

Rabbit whole blood and rabbit plasma were inoculated with saline suspensions of *T. pallidum*, and both suspensions were divided into two equal parts, one of each to be irradiated and the other two, not irradiated, to be the infectivity controls. The plasma *T. pallidum* and the whole blood *T. pallidum* suspensions were subjected to ultraviolet irradiation in that order using the Oppenheimer-Levinson apparatus (*9*). The average exposure time to the ultraviolet light was 0.25 seconds for the plasma and 0.52 seconds for the whole blood. Two groups of rabbits were transfused in the ear vein with 7 ml. per kilogram and concurrently both testicles were inoculated with 0.5 ml. of the test material immediately following irradiation. The group receiving the nonirradiated control material was handled last.

The results (table 3) show that none of the seven rabbits transfused with plasma *T. pallidum* suspension exposed to ultraviolet irradiation developed syphilis. The six rabbits transfused with irradiated whole blood *T. pallidum* suspension developed syphilis. All the rabbits transfused with the nonirradiated *T. pallidum* infectivity controls, seven in each group, developed syphilis.

Table 3. *Efficiency of ultraviolet irradiation for the prevention of experimental syphilis by transfusion in rabbits*

Transfusion material	Irradiated			Nonirradiated		
	Number rabbits	Syphilis		Number rabbits	Syphilis	
		Positive	Negative		Positive	Negative
Plasma *Treponema* [1]	7	0	[3] 7	7	7	0
Whole blood *Treponema* [2]	6	6	0	7	7	0

[1] Ultraviolet exposure time 0.25 second.
[2] Ultraviolet exposure time 0.52 second.
[3] Reinoculation test: 4 positive, 1 negative, 2 dead.

On the basis of the experimental evidence presented in this study, it would appear that the transmission of syphilis in transfusions with freshly drawn blood from donors with preclinical syphilis will not be prevented by treatment with ultraviolet irradiation, or by crystalline penicillin G in large amount, prior to administration to the recipient.

Conclusions

Transmission of experimental syphilis in rabbits by transfusion was not prevented by previous exposure of whole blood containing virulent *T. pallidum* to ultraviolet irradiation, using the Oppenheimer-Levinson quartz chamber apparatus, or to crystalline penicillin G in large quantity, added 1 hour before transfusion.

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Incidence of Disease

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

Reports from States for Week Ended April 28, 1951

Influenza

The following information is prepared in collaboration with the Influenza Information Center, National Institutes of Health. The number of cases reported for the current week was 1,880 compared with 3,499 for the previous week.

Dr. S. F. Kalter, of the collaborating laboratory at Syracuse University, New York, has reported the isolation of influenza virus from 49 throat washings out of 99 tested. Of 47 paired serum specimens tested by hemagglutination inhibition, the majority had significant increases in titer against a strain of influenza virus isolated in that laboratory and against the FM–1 strain. Some showed a significant increase only against the PR–8 strain, and 1 showed a significant increase against influenza B.

Dr. E. H. Lennette, Director of the Regional Laboratory at Berkeley, Calif., reports a significant increase in titer by the complement fixation test against influenza A virus in 20 paired serum specimens tested during the last 2 weeks of April.

Gastroenteritis

Dr. H. M. Erickson, Oregon State Health Officer, has reported 22 cases of food poisoning. Five cases were associated with barbecued turkey or pork sandwiches purchased in a restaurant, and 17 with banana or coconut cream pies supplied by the same manufacturer. *Staphylococcus aureus* was isolated from one unopened pie and in partially eaten pies in households where illness occurred. It was reported that lack of refrigeration of the pies during transportation may have been a contributing factor.

Dr. R. M. Albrecht, New York State Department of Health, reports an outbreak of gastroenteritis occurring among three married couples living in Suffolk County. Dr. Rafle, who conducted the investigation, found pastrami sandwiches to be the probable source of infection. The pastrami was kept on a steam table where the temperature was suitable for bacterial growth. *Staphylococcus aureus* and a gram negative organism were isolated from a sample of pastrami.

Vincent's Angina

Dr. A. S. McCown, Virginia Department of Health, has reported a high incidence of Vincent's angina in Tazewell County. More than 100 persons of all ages have been seen in a local hospital. The main complaint was an acute sore throat, often accompanied by a slight rise in temperature. A few instances of multiple family cases were observed, but close personal contact with other cases was usually absent. A similar outbreak occurred 1 year ago. All cases showed spirochetes and fusiform bacilli typical of Vincent's angina.

Rabies

Dr. W. R. Geidt, Washington State Department of Health, in a follow-up report of an outbreak of rabies in dogs in Spokane, states that the source of infection of the first case was not found. From March 10 to April 21, a total of 14 dogs and 1 cat were proved to have rabies in the city of Spokane, with an additional animal in the county and also 1 in the adjoining county of Whitman, near the Idaho-Washington boundary line. Five persons have been bitten by confirmed rabid animals. A definite pattern of geographic spread has been noted in the city of Spokane.

A total of 118 cases of rabies in animals was reported in Missouri for the week ended April 28, and 63 for the previous week.

Comparative Data for Cases of Specified Reportable Diseases: United States

[Numbers after diseases are International List numbers, 1948 revision]

Disease	Total for week ended—		5-year median 1946–50	Seasonal low week	Cumulative total since seasonal low week		5-year median 1945–46 through 1949–50	Cumulative total for calendar year—		5-year median 1946–50
	Apr. 28, 1951	Apr. 29, 1950			1950–51	1949–50		1951	1950	
Anthrax (062)	2			(1)	(1)	(1)	(1)	26	9	17
Diphtheria (055)	70	116	164	27th	4,377	6,730	9,681	1,470	2,459	3,323
Encephalitis, acute infectious (082)	23	9	9	(1)	(1)	(1)	(1)	[2] 263	224	142
Influenza (480–483)	1,880	3,471	1,252	30th	123,220	140,842	140,842	108,678	130,258	124,108
Measles (085)	26,461	13,263	28,426	35th	298,151	165,494	341,543	269,450	146,364	306,597
Meningitis, meningococcal (057.0)	92	83	87	37th	[3] 2,785	2,530	2,489	[3] 1,824	1,616	1,517
Pneumonia (490–493)	1,289	2,029	(4)	(1)	(1)	(1)	(1)	[5] 33,296	42,883	(4)
Poliomyelitis, acute (080)	73	69	56	11th	341	378	214	1,553	1,509	782
Rocky Mountain spotted fever (104)	2	2	2	(1)	(1)	(1)	(1)	7	18	18
Scarlet fever (050) [6]	2,251	1,468	1,988	32d	54,266	45,727	68,258	38,575	29,288	44,960
Smallpox (084)			5	35th	13	41	64	5	20	43
Tularemia (059)	13	12	14	(1)	(1)	(1)	(1)	233	346	346
Typhoid and paratyphoid fever (040, 041) [7]	33	41	52	11th	237	249	272	672	759	760
Whooping cough (056)	2,319	2,984	1,913	39th	48,523	65,955	65,955	26,921	44,419	36,738

[1] Not computed.
[2] Deduction: North Carolina, week ended Mar. 17, 1 case.
[3] Addition: North Carolina, week ended Mar. 17, 1 case.
[4] Data not available.
[5] Addition: Florida, week ended Apr. 14, 22 cases.
[6] Including cases reported as streptococcal sore throat.
[7] Including cases reported as salmonellosis.

Reported Cases of Selected Communicable Diseases: United States, Week Ended April 28, 1951

[Numbers under diseases are International List numbers, 1948 revision]

Area	Diphtheria (055)	Encephalitis, infectious (082)	Influenza (480–483)	Measles (085)	Meningitis, meningococcal (057.0)	Pneumonia (490–493)	Poliomyelitis (080)
United States	**70**	**23**	**1,880**	**26,461**	**92**	**1,289**	**73**
New England	**3**		**35**	**888**	**4**	**33**	**1**
Maine			25	29		6	
New Hampshire			9	19		2	
Vermont				172			
Massachusetts	3			517	1		
Rhode Island				8		5	
Connecticut			1	143	3	20	1
Middle Atlantic	**5**	**7**	**40**	**3,495**	**11**	**186**	**5**
New York	2	4	[1] 7	1,169	7	67	3
New Jersey	2	3	33	723	1	42	1
Pennsylvania	1			1,603	3	77	1
East North Central	**2**	**8**	**27**	**4,053**	**24**	**127**	**4**
Ohio	1			1,223	9		
Indiana			4	194	1	15	2
Illinois		3	4	630	5	73	2
Michigan	1	4	19	630	5	39	
Wisconsin		1		1,376	4		
West North Central	**4**	**2**	**38**	**1,589**	**7**	**43**	**3**
Minnesota	1		1	64	1	4	
Iowa				294	1	3	1
Missouri	3		9	206	3	4	1
North Dakota		1	28	77	1	20	
South Dakota				13			1
Nebraska		1		15			
Kansas				920	1	12	
South Atlantic	**11**	**2**	**617**	**2,237**	**17**	**155**	**9**
Delaware				14			
Maryland			9	168	1	44	
District of Columbia				69		16	
Virginia	1		449	780	4	67	
West Virginia	2			442	2		2
North Carolina	4			358	5		
South Carolina	1		67	28		13	1
Georgia			92	264	2	15	2
Florida	3	2		114	3		4
East South Central	**15**		**90**	**1,167**	**11**	**87**	**10**
Kentucky	6		12	857	4	14	3
Tennessee	4		67	129	3		2
Alabama	4			143	4	51	2
Mississippi	1		11	38		22	3
West South Central	**23**	**2**	**593**	**5,842**	**16**	**515**	**14**
Arkansas	3		422	490	1	71	
Louisiana			1	211		17	4
Oklahoma	5	2	170	877	2	56	1
Texas	15			4,264	13	371	9
Mountain	**2**		**296**	**1,391**		**65**	**7**
Montana			16	45			
Idaho				102			1
Wyoming				92		1	1
Colorado			21	323		15	1
New Mexico	1			170		12	
Arizona	1		259	606		37	4
Utah				48			
Nevada				5			
Pacific	**5**	**2**	**144**	**5,799**	**2**	**78**	**20**
Washington	3		6	1,212		6	1
Oregon			43	780		22	1
California	2	2	95	3,807	2	50	18
Alaska			21				
Hawaii			8	4		1	

[1] New York City only.

Reported Cases of Selected Communicable Diseases: United States, Week Ended April 28, 1951—Continued

[Numbers under diseases are International List numbers, 1948 revision]

Area	Rocky Mountain spotted fever (104)	Scarlet fever (050)	Smallpox (084)	Tularemia (059)	Typhoid and paratyphoid fever [1] (040, 041)	Whooping cough (056)	Rabies in animals
United States	**2**	**2,251**	----	**13**	**33**	**2,319**	**294**
New England	----	**228**	----	----	----	**89**	----
Maine	----	31	----	----	----	18	----
New Hampshire	----	[2] 10	----	----	----	4	----
Vermont	----	4	----	----	----	10	----
Massachusetts	----	151	----	----	----	43	----
Rhode Island	----	2	----	----	----	10	----
Connecticut	----	30	----	----	----	4	----
Middle Atlantic	**1**	**467**	----	**1**	**4**	**1,000**	**5**
New York	1	[3] 258	----	1	2	60	5
New Jersey	----	70	----	----	----	48	----
Pennsylvania	----	139	----	----	2	892	----
East North Central	----	**702**	----	**1**	**6**	**218**	**24**
Ohio	----	172	----	----	2	65	3
Indiana	----	47	----	----	----	12	16
Illinois	----	79	----	----	4	17	2
Michigan	----	328	----	----	----	70	3
Wisconsin	----	76	----	1	----	54	----
West North Central	----	**151**	----	----	**1**	**60**	**132**
Minnesota	----	20	----	----	----	8	5
Iowa	----	13	----	----	----	12	9
Missouri	----	53	----	----	1	7	118
North Dakota	----	5	----	----	----	4	----
South Dakota	----	6	----	----	----	2	----
Nebraska	----	8	----	----	----	----	----
Kansas	----	46	----	----	----	27	----
South Atlantic	**1**	**175**	----	**3**	**5**	**177**	**29**
Delaware	----	1	----	----	----	2	----
Maryland	1	36	----	----	1	6	----
District of Columbia	----	18	----	----	1	5	----
Virginia	----	19	----	1	1	72	8
West Virginia	----	39	----	----	----	----	1
North Carolina	----	44	----	----	2	47	----
South Carolina	----	1	----	----	----	7	16
Georgia	----	10	----	2	----	21	4
Florida	----	[3] 7	----	----	----	17	----
East South Central	----	**59**	----	**1**	**2**	**114**	**38**
Kentucky	----	28	----	----	----	28	16
Tennessee	----	25	----	----	1	24	15
Alabama	----	4	----	----	1	47	2
Mississippi	----	2	----	1	----	15	5
West South Central	----	**92**	----	**3**	**6**	**477**	**64**
Arkansas	----	3	----	1	1	45	2
Louisiana	----	2	----	----	----	3	[3] 28
Oklahoma	----	38	----	2	----	31	7
Texas	----	49	----	----	5	398	27
Mountain	----	**88**	----	**4**	**6**	**108**	**1**
Montana	----	4	----	1	1	5	----
Idaho	----	16	----	1	3	2	----
Wyoming	----	1	----	----	----	12	----
Colorado	----	16	----	----	----	21	----
New Mexico	----	2	----	----	1	9	----
Arizona	----	10	----	----	1	57	1
Utah	----	[3] 39	----	2	----	2	----
Nevada	----	----	----	----	----	----	----
Pacific	----	**289**	----	----	**3**	**76**	**1**
Washington	----	64	----	----	----	18	1
Oregon	----	34	----	----	----	13	----
California	----	[3] 191	----	----	3	45	----
Alaska	----	1	----	----	----	----	----
Hawaii	----	2	----	----	1	1	----

[1] Including cases reported as salmonellosis. [2] Including cases reported as streptococcal sore throat.
[3] Report for March.

Psittacosis: California, 1 case.

FOREIGN REPORTS

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

The following reports include only items of unusual incidence or special interest and the occurrence of these diseases, except yellow fever, in localities which had not recently reported cases. All reports of yellow fever are published currently. A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

Burma. The incidence of cholera in Bassein increased more than fourfold during the week ended April 21, 1951, from 12 cases the previous week to 53. Conversely, a decrease was noted in Moulmein and Rangoon for the week ended April 21, from 28 cases to 8 and 6 to 2, respectively.

Pakistan. During the week ended April 21, 1951, five cases of cholera were reported in Chittagong. Three cases were reported in Dacca for the week ended April 7, 1951.

Smallpox

Burma. During the week ended April 21, 1951, smallpox was reported in ports as follows: Akyab one case, Moulmein two fatal cases, Rangoon four cases.

India (French). For the week ended April 14, 1951, 14 cases of smallpox were reported in Karikal (11 cases) and Pondicherry (3).

Indonesia. During the week ended April 7, 1951, 92 cases of smallpox were reported in Samarinda, Borneo, and 10 cases were reported in Bandjarmasin. The incidence of smallpox in ports of Java for the week ended April 14 was as follows: Bandoeng two cases, Surabaya six, Tjilatjap one.

Typhus Fever

Turkey. During the week ended April 21, five cases of typhus fever were reported in Istanbul as compared with one case for the previous week.

Yellow Fever

Ecuador. The first case of jungle yellow fever in Santo Domingo de los Colorados occurred on January 27, 1951, and up to March 21, 53 cases (19 deaths) had been reported. Two of the deaths were histologically confirmed. During the period March 16–29, 5,849 persons within the affected area were vaccinated.

Gold Coast. A suspected case of yellow fever reported in Accra on April 4, 1951, was not confirmed. On April 6, one case was reported

and confirmed histologically in Nsawam. One suspected case was reported 30 miles southwest of Wa. The patient, an African male, was admitted to the hospital on April 15, and died the same day. Two suspected cases were reported in Adeiso on April 16, 1951.

Panama. One confirmed case of jungle yellow fever was reported in the Province of Bocas del Toro for the week ended April 14, 1951. The exact location was not reported. However, the case occurred near the Costa Rican border and the patient was a Costa Rican.

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